

1984 Pittsburgh Conference
Program Page 31
CALENDAR OF EVENTS
Scientific meetings Page 37

DECEMBER 12, 1983

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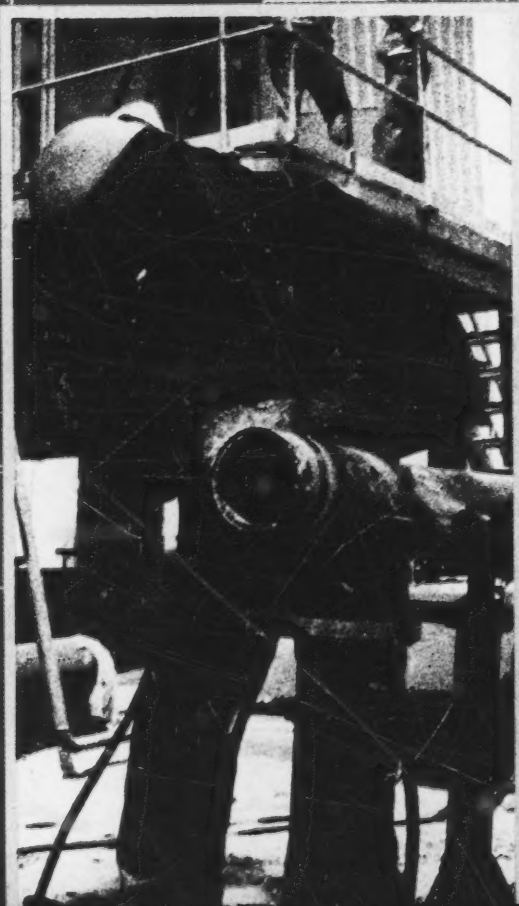
CHEMICAL & ENGINEERING

NEWS

**Chemical capital
spending finally
rebounds**

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News of the Week

■ Two leading business groups are bullish on 1984. **Page 4**

■ Visitors to the biennial Chem Show in New York City were in a buying mood. **Page 4**

■ Mobay Chemical's newly developed polycarbonate resin can be molded 15% faster than standard grades. **Page 5**

■ Paul V. Smith Jr. elected 1984 chairman of the ACS Board of Directors. **Page 5**

Business

Laser market will triple by 1987, report forecasts, especially for medical and scientific uses, communications. **Page 12**

International Business

Although Brazil and Mexico have lowered chemical trade deficits, most Latin American countries can't boost exports. **Page 13**

Government

Office of Management & Budget accuses EPA of overregulating, but some Congressmen think OMB is misinterpreting its mission; former EPA aide Rita Lavelle found guilty of perjury. **Page 19**

Science

Zero-field NMR enhances interpretation of complex spectra; ion detection increases Raman sensitivity; oxygen monitor will be used to study fate of carbon dioxide in the atmosphere. **Page 23**

ACS News

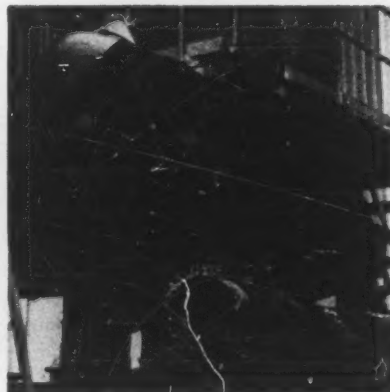
Society's Committee on Professional Relations reports on 19 mass terminations of chemists and chemical engineers. **Page 27**

Meetings

35th Pittsburgh Conference on Analytical Chemistry & Applied Spectroscopy will be held in Atlantic City March 5-9. **Page 31**

C&EN's semiannual calendar of events lists meetings of interest to chemists and chemical engineers during 1984. **Page 37**

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Cover Story

U.S. chemical capital spending will rise 14% in 1984, a significant recovery from the drastic 1983 decline. **Page 10**

Chemical Capital Spending Starts To Rebound

Expenditures by major U.S. chemical firms are slated to rise 14% in 1984 following big drop this year, but still will be below 1982 level

William J. Storck, C&EN New York

Turnaround time finally has arrived in the U.S. basic chemical industry for capital spending, its largest use of funds after ordinary running expenses and taxes. This future-oriented investment in new plant and equipment is on its way up again in 1984 after the worst drubbing in recent decades.

Rebounding perhaps a bit earlier than many industrial analysts would have suspected a year ago, capital spending has to rise now as chemical companies use up spare plant capacity and build up larger than expected cash flows (earnings plus depreciation). This means that the first relief is in sight for hard-pressed suppliers of chemical equip-

ment and engineering and construction services.

Specifically, C&EN's annual survey of capital spending budgets at leading U.S. basic chemical firms finds a 14% gain in store for 1984 after a worse than expected 23% drop in 1983. The resurgence is widespread, touching most producers.

The decline in 1983 should come as no surprise. Weak earnings forced many chemical producers to cut back on expenditures. Of course, the same situation that brought about the poor financial performance—lack of demand for chemical products—also alleviated the need for large infusions of capital investment during 1983 to build production facilities.

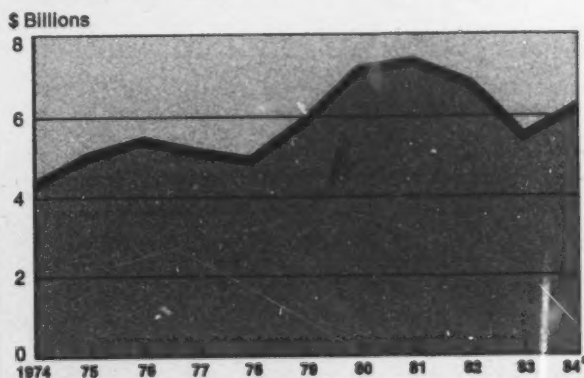
According to the Federal Reserve Board, seasonally adjusted chemical capacity use still is hovering in the low 70% range, up from 65% a year ago, in spite of a chemical production recovery under way since November 1982. With almost 30% of chemical plant capacity still idle, there has been very little need for chemical companies to build new plants. In fact, it seems that most

plant expansions in the past year or more came about from efforts to boost efficiencies and capacity increases through new process developments rather than through new facilities.

Then, too, interest rates and the cost of capital have been higher than the possible return on investment that companies could hope to get from many new chemical projects. Although interest rates may ease somewhat in early 1984, many economists see interest rates trending back upwards later in the year. Thus, companies may have a small window early next year in which to go to the market for debt, but unless returns increase substantially, even this may not help the capital spending situation very much.

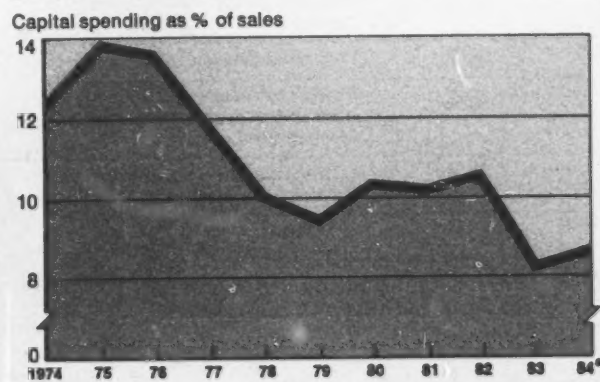
The slight rebound in capital spending is not limited to the chemical industry. Wharton Econometric Forecasting Associates, Philadelphia, says that business fixed investment spending is beginning to rise and will lead the economy upward in 1984. Wharton says, however, that the length and depth of the reces-

Capital spending for the U.S. chemical industry will begin to recover in 1984...



* C&EN estimate. Source: Combined data from major chemical companies

...and spending will increase as a percentage of sales



Chemical capital spending will rise to \$5.37 billion for major firms

\$ Millions	1984		1983		Worldwide					Change from previous year	
	World	U.S.	World	U.S.	1983 Planned ^a	1982	1981	1980	1979	1984	1983
Air Products	\$ 300	\$ 250	\$ 246	\$ 213	\$ 275	\$ 347	\$ 323	\$ 364	\$ 246	22.0%	-29.1%
American Cyanamid	na	na	na	na	190	171	181	196	235	na	na
Celanese	na	na	na	na	110	275	414	253	245	na	na
Dow Chemical	750	400	600	320	750	829	1176	1184	1268	25.0	-27.6
Du Pont ^b	1500 ^c	na	1276 ^c	na	1100	1300	1420	1297	864	17.2	-1.8
Ethyl	95	90	80	75	100	92	141	156	123	18.8	-13.0
W. R. Grace	450	365	375	322	495	560	657	658	514	20.0	-33.0
Hercules	200	160	175	140	200	165	167	229	186	14.3	6.1
Monsanto	600	552	550	506	700	673	668	781	566	9.1	-18.3
Olin	175	170	130	126	160	139	186	172	161	34.6	-6.5
PPG Industries	400	na	400	na	400	452	376	401	252	0.0	-11.5
Pennwalt	na	na	na	na	na	77	53	53	66	na	na
Rohm & Haas	na	na	75	60	85	126	182	93	68	na	-40.5
Stauffer Chemical	130	110	104	96	170	177	239	246	239	25.0	-41.2
Union Carbide	775 ^c	540 ^c	770	539	950	1179	1186	1129	831	0.6	-34.7
TOTAL	\$5371	\$2637	\$4781	\$2397	\$5685	\$6562	\$7369	\$7212	\$5864		
ANNUAL CHANGE^d	14.1%	12.8%	-22.6%	-27.1%	-11.8%	-11.0%	2.2%	23.0%	18.9%		

a Earliest estimates. b Excludes Conoco. c C&EN estimates. d Cumulative change for companies reporting. na = not available.

sion have left their mark on investment spending.

If such a scar remains on capital spending, it may be that companies will be more cautious in the future about committing funds to capital projects. Besides the recession, higher interest rates, a generally slower chemical economy, and a new import threat may reinforce this caution. If this does indeed come about, it will help prevent what many industry analysts see as one of the great sins of the past in the industry—the overexpansion in basic chemical products, many of which have become only marginally profitable.

Therefore, it may be a long time before the chemical industry increases its capital spending at the 20 to 25% per year clip that was typical in the late 1970s.

For 1983, the bottom fell out in new plant investment. Combined capital spending for 12 of 15 companies surveyed by C&EN (those giving consistent data) declined 22.6% from 1982 to about \$4.78 billion. Originally, chemical companies had planned to spend about 12% less than in 1982. However, as the financial aftermath of the 1982 recession deepened during this year's first two quarters, most companies clamped down on capital spending plans.

One of the big surprises, however, is that domestic spending by chemical companies dropped faster in 1983 than did total capital spending—indicating that overseas spending was not cut so much as was domestic spending. Whereas total capital spending by the companies responding dropped 22.6%, capital spending in the U.S. fell by a much greater 27.1%.

Of the companies surveyed, the biggest percentage drops in capital spending in 1983 from 1982 were at Stauffer Chemical, whose spending fell 41.2% to \$104 million, and at Rohm & Haas, whose investment in plant and equipment fell 40.5% to \$75 million. These were followed by an almost 35% decrease for Union Carbide to about \$770 million.

Air Products lowered its capital spending a little more than 29% from last year to \$246 million. And Dow Chemical cut spending almost 28% to about \$600 million. Dow's capital spending thus has dropped to less than half its 1979 level of \$1.27 billion.

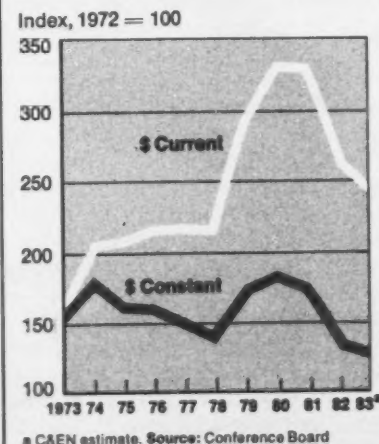
Monsanto's capital spending fell 18.3% this year to about \$550 million, and Ethyl, which had the largest decline among the companies surveyed last year, sliced spending 13% to \$80 million in 1983.

Only one company, Hercules, in-

creased its capital spending in 1983 over last year—a 6.1% gain to \$175 million.

The outlook for next year among U.S. chemical companies is a reverse of 1983, although capital expenditures will not regain their 1982 levels. Surveyed firms indicate that capital spending next year will increase 14% over 1983 to \$5.37 billion. For those firms that break out foreign and domestic spending, such spending within the U.S. will rise about 13% to \$2.64 billion.

Capital appropriations still down for chemical industry





Typical of capital projects this year is PPG's modernization at Lake Charles, La., chlorine-caustic plant

The largest increase next year reported so far is at Olin, which plans a nearly 35% boost in capital spending to \$175 million. Among other companies slating pickups, Dow plans a 25% increase to \$750 million, and Air Products plans a 22% gain to \$300 million. W. R. Grace also plans a 20% increase to \$450 million, Ethyl is budgeting a nearly 19% boost to \$95 million, and Du Pont (according to C&EN estimates) likely will increase its chemical spending about 17% to almost \$1.5 billion.

Only two companies, Union Carbide and PPG Industries, are not scheduling large increases in capital spending for 1984. Both are planning to keep investment spending for next year about the same as in 1983.

U.S. chemical companies likely won't have much trouble financing the increase in capital spending next year. In spite of still high interest rates, many of them have shelf registrations (large debt packages filed in advance with the federal government) that they can use when convenient. However, these may not be necessary, since most companies will be able to finance capital needs out of internal cash flow or new stock and will not have to borrow at all. □

Laser market due to triple by 1987

From a standing start in the 1960s, the intense light beams called lasers grew quickly into a broad-based U.S. business in the 1970s. But the fastest growth is still to come, say consultants Predicasts of Cleveland in a new report. The 1980s are expected to be a scintillating decade for lasers (light amplification by stimulated emission of radiation), more than tripling their 1982 market value in current dollars to \$665 million in 1987. Growth will be across the board, touching all major types and markets (excluding military applications).

From 1982 through 1987, laser sales growth will average an eye-catching 26% per year, Predicasts predicts—slightly faster than the average 23% pace over the previous decade, when sales shot from \$26 million in 1972 to \$210 million in 1982. After 1987, sales growth will throttle down to 11% per year to push the total to \$1.58 billion in 1995. Compared to U.S. economic growth, the 1990s laser clip will come close to the rate for current-dollar gross national product after running two and a half times that rate in the 1980s.

Behind such enviable prospects are massive market penetrations due for major laser types. The big gainer among the three major markets will be the medical and scientific area, where lasers with their capabilities in bloodless surgery are expected to play an increasing role in the fight against cancer. Predicasts says this market will grow 31% per year from 1982 through 1987, from \$70 million to \$275 million.

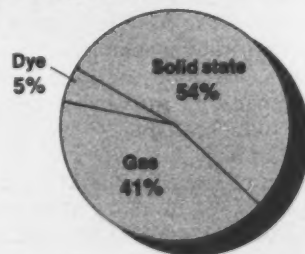
Not far behind medical uses in growth will be communications, currently the largest market with \$80 million sales in 1982. Average jumps of 23% per year will put this market at \$225 million in 1987, the report estimates. The main applications here are diode lasers in fiber-optic communications such as new telephone lines, and helium neon lasers in reprographics and printing.

The third principal market, industrial processing uses, was crimped by the three recent stop-and-go recession years. As a result, its average annual growth rate for the past decade lagged the other two major markets. But for the half-decade after 1982, Predicasts says annual growth will rebound to 22%, pushing sales from \$60 million to \$165 million. Typical uses include welding, drilling, cutting, heat-treating annealing, and lithography.

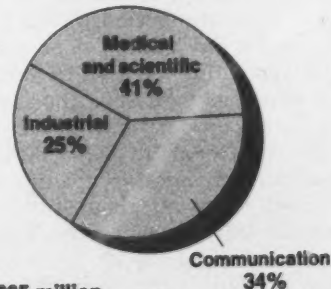
Amid such market strength, all major laser types—solid state, gas, and dye—are due solid gains, Predicasts finds. Best growth over the next five years will be for the solid-state group, which will take over the lead by 1987 after 32% average annual growth to \$360 million in sales. The major push here will come from the communications market.

For the other two laser types, Predicasts estimates that sales of the gas group will shoot up 20% per year to reach \$275 million in 1987, and dye lasers up 25% annually to \$30 million. Helping gas lasers will be the medical market. Dye lasers will find their main use in testing and measurement. □

Solid-state types will be largest laser class ...



... with medical and scientific uses the largest market



Total 1987 sales = \$665 million

Source: Predicasts